



**UNITED STATES DEPARTMENT OF COMMERCE**  
**United States Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/396,381 09/15/99 YAMAZAKI

S 0756-2027

EXAMINER

IM52/0711

SIXBEY FRIEDMAN LEEDOM & FERGUSON P C  
8180 GREENSBORO DRIVE  
SUITE 800  
MCLEAN VA 22102

ANGEBRANDT, M

ART UNIT

PAPER NUMBER

1756

DATE MAILED:

07/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

BEST AVAILABLE COPY

# Office Action Summary

Application No.  
09/396,381

Applicant(s)  
Yamazaki et al.

Examiner  
Martin J. Angebrannt

Art Unit  
1756



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on May 7, 2001
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-20, 22-34, 36-48, and 50-167 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-20, 22-34, 36-48, and 50-167 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)                      18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_                      20) ☐ Other:

Art Unit: 1756

1 The response provided by the applicant has been read and given careful consideration. Responses to the arguments offered by the applicant are presented after the first rejection to which they are directed.

2 Claims 1-6,8-20,22-34,36-48 and 50-167 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims should indicate that the hard-carbon coating is an outermost layer of the disk or medium.

The applicant argues that it is clear from the language “ a surface protected by ...” that the carbon layer is the outermost layer. The examiner notes that the applicant may be prosecution estopped from another position due to this statement, but notes that the language does not specify that the surface protected is an otherwise exposed surface. It is known in the art and of record to use a protective layer between the substrate and another layer such as a recording layer to prevent oxygen or water intrusion, but the surface protected is not an otherwise outermost or exposed surface. The rejection is maintained.

3 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1756

4        Claims 101,103,105-107,109,110,112,114,116-118,120,121,123,125,127-129,131,132, 134,136,138-140,142,143,145,147,149-151,153,154,156,158,160-162,164 and 165 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-058744.

JP 02-058744 teaches an optical recording memory disc which is formed by stamping or embossing the data into the substrate, coating a 30 nm carbon film, coating a reflective Al layer, overcoating this with a 50 nm carbon film and a resinous protective layer.

It would have been obvious to one skilled in the art to use this optical recording medium with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range, based upon its disclosed functionality. The examiner holds that the films of JP 02-058744 meet the recited limitation of the claims.

The examiner holds on the basis of the high resistance to degradation, which would have to occur through holes in the carbon film, for over 1000 hours that any pinholing in the film would be below the recited limit of the claim. The applicant disagrees with this assertion, but has not provided any other plausible explanation for the resistance of the medium. The examiner position is congruent with the concept of a protective layer acting as a barrier to forestall any degradation and no evidence is on the record to refute the examiners assertion of the low pinholing while all the evidence supports the examiner's position. The examiner holds that it would have been obvious to read the information of the medium through either side of the medium, where the surface of the aluminum layer is protected by the carbon layer and the light therefore passed through the carbon layer.

Art Unit: 1756

The applicant argues only that film hardness and adhesion do not necessarily infer low pinhole density. The examiner responds that hardness and therefore increased density may infer low pinholing, but it is not clear in this case if it would be below the limit set forth in the claim. The issue is that to protect the aluminum layer for 1000 hours the permeability of the carbon layer must be small and therefore the pin holing is reasonably held to be below the recited limit of the claims. **The applicant may submit data concerning films produced by JP 02-058744 to support his position that the films do not meet the recited claim requirements.** The rejection stands.

5      Claims 101,103,105-107,109,110,112,114,116-118,120,121,123,125,127-129,131,132, 134,136,138-140,142,143,145,147,149-151,153,154,156,158,160-162,164 and 165 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-058744, as applied to claim above, and further in view of Marchant "Optical recording: A technical overview", pp. 132-139 (©1990).

Marchant "Optical recording: A technical overview", pp. 132-139 (©1990) teaches that various lasers have been used for optical recording, including the Ar ion and the He-Cd laser which have outputs in the blue region of the visible spectrum. The use of semiconductor diode lasers is disclosed as desirable due to their low power requirements, size, ease of modulation and cost. These are disclosed as having outputs of 780 nm and longer.

It would have been obvious to one skilled in the art to use the optical recording medium of

Art Unit: 1756

JP 02-058744 with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range disclosed by Marchant "Optical recording: A technical overview", pp. 132-139 (©1990), based upon its disclosed functionality.

The rejection is presented in addition to that above to refute any arguments that the use of semiconductor laser diodes in the 700-800 nm range would not have been obvious to one skilled in the art at the time the invention was made.

The rejection is maintained for the reasons provided above as no further arguments were directed at this rejection.

6 Claims 101-107, 109-118, 120-129, 131-140, 142-151, 153-162 and 164-166 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-058744, in view of Marchant "Optical recording: A technical overview", pp. 132-139 (©1990) combined with either Shinohara JP 01-184722 or Kitoh et al. '850.

Shinohara JP 01-184722 teaches the incorporation of boron (as  $B_2H_6$ ) silicon and/or Ti in amounts of 3-15% of the final film composition for magnetic recording media with high hardness. (page 2/lower right column). This increases C/N for short wavelengths. (abstract)

Kitoh et al. '850 teaches the incorporation of tin, germanium, silicon, lead, and fluorine into hard carbon protective coatings to increase peeling resistance, crack resistance and corrosion resistance. (abstract)

It would have been obvious to one skilled in the art to use other diamond like carbon containing films such as those taught by Shinohara JP 01-184722 or Kitoh et al. '850 in place of

Art Unit: 1756

the purely carbon protective layer of the optical recording medium of JP 02-058744 and to use it with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range disclosed by Marchant "Optical recording: A technical overview", pp. 132-139 (©1990) with a reasonable expectation of achieving comparable results based upon their disclosed functionality as protective layers.

The rejection is maintained for the reasons provided above as no further arguments were directed at this rejection.

7 Claims 101,103,105-110,112,114,116-121,123,125,127-132, 134,136,138-143,145,147, 149-154,156 and 158-165 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-058744, in view Ikoma et al. '829.

Ikoma et al. '829 teaches an optical recording card which includes a ultrahard carbon film having a thickness of 0.01 to 2 microns (10-200 nm) (col 3/lines 44-48, hereinafter 3/44-48). The Raman spectrum of this film has been measured to determine its structure (3/1-34). The use of a semiconductor laser having an output of 780 nm is disclosed in the examples.

It would have been obvious to evaluate the quality of the film of JP 02-058744 following formation using raman scattering or the like as taught by Ikoma et al. '829 to determine the structure of the film as this is known to be desirable within the art.

The rejection is maintained for the reasons provided above as no further arguments were directed at this rejection.

Art Unit: 1756

8 Claims 1-6,15-20,29-34,43-49,57,59,61-66,68,70,72-77,79,81,83-88,90,92,94-99,134,136,138-143,145,147,149-154,156,158, and 160-165 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto JP 04-219647 or Hirayama et al. JP 04-355228, in view of Ikoma et al. '829 combined with either Shinohara et al. 63-275037 or Murai et al. '132.

Miyamoto JP 04-219647 teaches magneto-optic recording media having a protective layer of 20-100 nm in thickness.

Hirayama et al. JP 04-355228 teaches protective layers of diamond like carbon with thicknesses of 30-150 nm for the protective layer.

Shinohara et al. 63-275037 teaches forming dense hard carbon films with decreased pinholes, thereby allowing films with reduced thicknesses to be formed.

Murai et al. '132 teaches the use of an irregular discharge to form denser carbon protective films for use in magnetic recording media. The coating is harder and therefore more wear resistant. (2/24-55)

It would have been obvious to one skilled in the art to use the magneto-optic recording media of over Miyamoto JP 04-219647 or Hirayama et al. JP 04-355228 with lasers known to be useful within the magneto-optical recording art, such as semiconductor lasers having outputs in the 700-800 nm range disclosed by Ikoma et al. '829, based upon its disclosed functionality as well as to use other carbon films known within the recording medium art to have excellent hardness, are denser, and reduced defects, such as those of Shinohara et al. 63-275037 or Murai



Art Unit: 1756

et al. '132 to allow thinner films to be used and thereby increase the rate of manufacture of the recording media.

The applicant argues that the Shinohara et al. 63-275037 or Murai et al. '132 do not teach the recited carbon films with the recited pinhole densities. The examiner notes that both of these references teach dense carbon films and Shinohara et al. 63-275037 in particular teaches low pinholing. **The applicant may submit data concerning films produced by Shinohara et al. 63-275037 or Murai et al. '132 to support his position that the films do not meet the recited claim requirements.** The rejection stands.

9        Claims 1-6,8-20,22-34,36-48,50-100 and 134-166 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto JP 04-219647 or Hirayama et al. JP 04-355228 combined with Ikoma et al. '829 and either of Shinohara et al. 63-275037 or Murai et al. '132, further in view of Shinohara JP 01-184722 or Kitoh et al. '850.

It would have been obvious to one skilled in the art to use the optical recording media of either Miyamoto JP 04-219647 or Hirayama et al. JP 04-355228 as modified by Ikoma et al. '829 combined with Shinohara et al. 63-275037 or Murai et al. '132 by including other materials such as Si,N, and/or fluorine as taught by Shinohara JP 01-184722 or Kitoh et al. '850 to obtain the

Art Unit: 1756

benefits ascribed to this addition to hard carbon films by Shinohara JP 01-184722 or Kitoh et al. '850.

The rejection is maintained for the reasons provided above as no further arguments were directed at this rejection.

10 Claims 1-6, 15-20, 29-34, 43-48, 57, 59, 61-66, 68, 70, 72-77, 79, 81, 83-88, 90, 92, 94-99, 134, 136, 138-143, 145, 147, 149-154, 156, 158, and 160-165 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brezoczky et al. '229, in view of Ikoma et al. '829 combined with Shinohara et al. 63-275037 or Murai et al. '132.

Brezoczky et al. '229 teaches the use of 30 nm thick carbon films with magneto-optical recording media. (7/21-45). These are disclosed as being used with semiconductor lasers. (7/25)

It would have been obvious to one skilled in the art to use the magneto-optical recording medium of Brezoczky et al. '229 with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range disclosed by Ikoma et al. '829, based upon its disclosed functionality as well as to use other carbon films known within the recording medium art to have excellent hardness, are denser, and reduced defects, such as those of Shinohara et al. 63-275037 or Murai et al. '132 to allow thinner films to be used and thereby increase the rate of manufacture of the recording media.

The rejection is maintained for the reasons provided above as no further arguments were directed at this rejection.

Art Unit: 1756

11 Claims 1-6,8-20,22-34,36-48,50-100 and 134-166 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brezoczky et al. '229, in view of Ikoma et al. '829 combined with Shinohara et al. 63-275037 or Murai et al. '132 and either Shinohara JP 01-184722 or Kitoh et al. '850.

In addition to the basis provided above, it would have been obvious to one skilled in the art to use the optical recording medium of Brezoczky et al. '229 as modified by Ikoma et al. '829 combined with Shinohara et al. 63-275037 or Murai et al. '132 by including other materials such as Si,N, and/or fluorine as taught by Shinohara JP 01-184722 or Kitoh et al. '850 to obtain the benefits ascribed to this addition to hard carbon films by Shinohara JP 01-184722 or Kitoh et al. '850.

The rejection is maintained for the reasons provided above as no further arguments were directed at this rejection.

12 Claims 1-6,15-20,29-34,43-48,57,59,61-66,101,103,105-110,112,114,116-121,123,125,127-132,134,136,138-143,145,147,149-154,156,158, and 160-165 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amata et al. JP 04-230034, in view of Ikoma et al. '829 combined with Shinohara et al. 63-275037 or Murai et al. '132.

It would have been obvious to one skilled in the art to use the optical recording medium of Amata et al. JP 04-230034 with lasers known to be useful within the optical recording medium art, such as semiconductor lasers having outputs in the 700-800 nm range disclosed by Ikoma et al. '829, based upon its disclosed functionality as well as to use other carbon films known within

Art Unit: 1756

the recording medium art to have excellent hardness, are denser, and reduced defects, such as those of Shinohara et al. 63-275037 or Murai et al. '132 to allow thinner films to be used and thereby increase the rate of manufacture of the recording media.

The rejection is maintained for the reasons provided above as no further arguments were directed at this rejection.

13 Claims 1-6,8-20,22-34,36-48,50-67 and 101-166 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amata et al. JP 04-230034, in view of Ikoma et al. '829 combined with Shinohara et al. 63-275037 or Murai et al. '132.

In addition to the basis provided above, it would have been obvious to one skilled in the art to use the optical recording medium of Amata et al. JP 04-230034 as modified by Ikoma et al. '829 combined with Shinohara et al. 63-275037 or Murai et al. '132 by including other materials such as Si,N, and/or fluorine as taught by Shinohara JP 01-184722 or Kitoh et al. '850 to obtain the benefits ascribed to this addition to hard carbon films by Shinohara JP 01-184722 or Kitoh et al. '850.

The rejection is maintained for the reasons provided above as no further arguments were directed at this rejection.

14 The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

Art Unit: 1756

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

16      Claims 1-167 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of U.S. Patent 6,171,674. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to one skilled in the art to use the media in a manner congruent with thier only posible use.

The applicant has taken no action and therefore the rejection stands. The provisional nature of this rejection has been withdrawn as the application has issued.

17      Claims 1-167 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of copending Application No. 09/396382. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to one skilled int he art to use the media in a manner congruent with thier only posible use.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented. **This application has been allowed.**

The applicant has taken no action and therefore the rejection stands.

Art Unit: 1756

18 **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

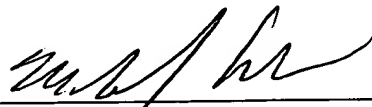
19 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Angebranndt whose telephone number is (703) 308-4397.

I am normally available between 7:30 AM and 5:00 PM, Monday through Thursday and 7:30 AM and 4:00 PM on alternate Fridays.

If repeated attempts to reach me are unsuccessful, my supervisor may be reached at (703) 308-4552.

Facsimile correspondence should be directed to (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



Martin J. Angebranndt  
Primary Examiner, Group 1750  
July 10, 2001